Hazardous Materials Awareness

April 2006

Agenda

Introductions & Class Administration

About your Text & References & Quiz

Intent and Legal Requirement for Training

What are Hazardous Materials?

Where are they found?

Consequences of Hazmat Spills

Recognizing/Identifying Hazardous Materials and the US DOT Guidebook

The Role of Awareness Level Personnel

Review and Quiz

Training & the EM Cycle

- Mitigation
- Preparedness
  - Planning
  - Training
  - Exercises

Hazmat Response

- Awareness
- Operations
- Technician

The level is identified in the employer’s plan under Federal State and local requirements

Practical Differences

- 55 Gallon Drum rolled on its side with the bung slowly leaking a fluid.
- What can you do at each level and WHY?

Who needs Training - Why?

- Public Works
- Police & Fire Personnel
- Health Professionals
- Emergency Managers
- Business People
- people at risk

Primary Objectives of Awareness

- Identification of Hazards
- Worker and Public Safety
- Do Not Become Part of the Problem

Understand the Potential Risks of a Hazardous Materials Release

Legal Objectives of Awareness

WAC 296-62-41021

What are Hazmats?
Presence of Hazmats
Relationship to plans
Use of DOT Guide
Potential Outcomes
Identify Hazmats
Site Security
Warning and Notices

NFPA 472 Standards

WAC 296-62 Part P & R

Understand Isolation, Evacuation, SIP

- No Time Requirement to Training
- Employer Certifies Competency
- Employer Maintains Records
- Annual refresher or Competency Statement
- Measure of Competency is at Employer Discretion

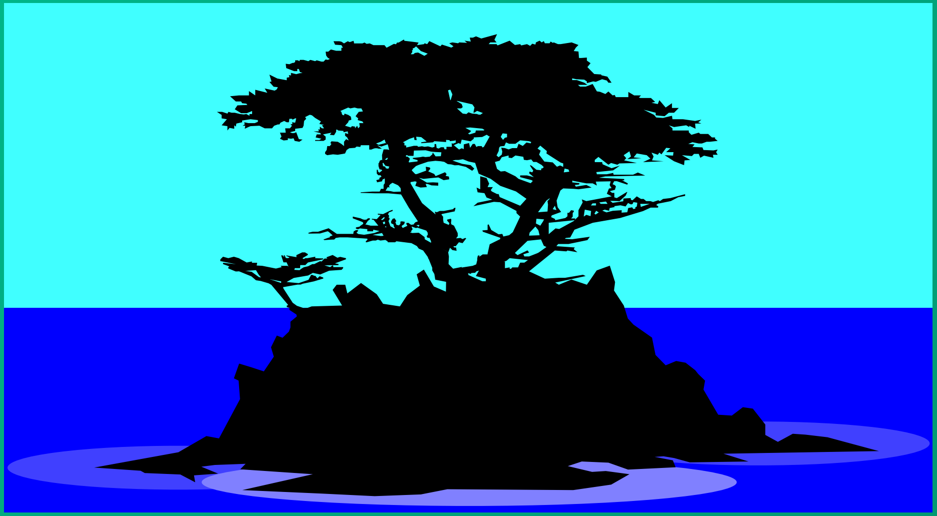
Helpful but Not Required

- Understand the Incident Management System
- Be Familiar with Decontamination Procedures
- Understand the Nature of incompatible materials
- Know some emergency medical skills
- Work with Neighbors on emergency procedures

What are Hazardous Materials?

- Any material that does injury to humans
- Materials that damage the environment

When outside their container or intended use



Where hazards exist….

- Transportation
- Businesses
- Illegal activities
- Schools
- Homes

examples?

Refineries and Transportation

Abandon Industrial Waste

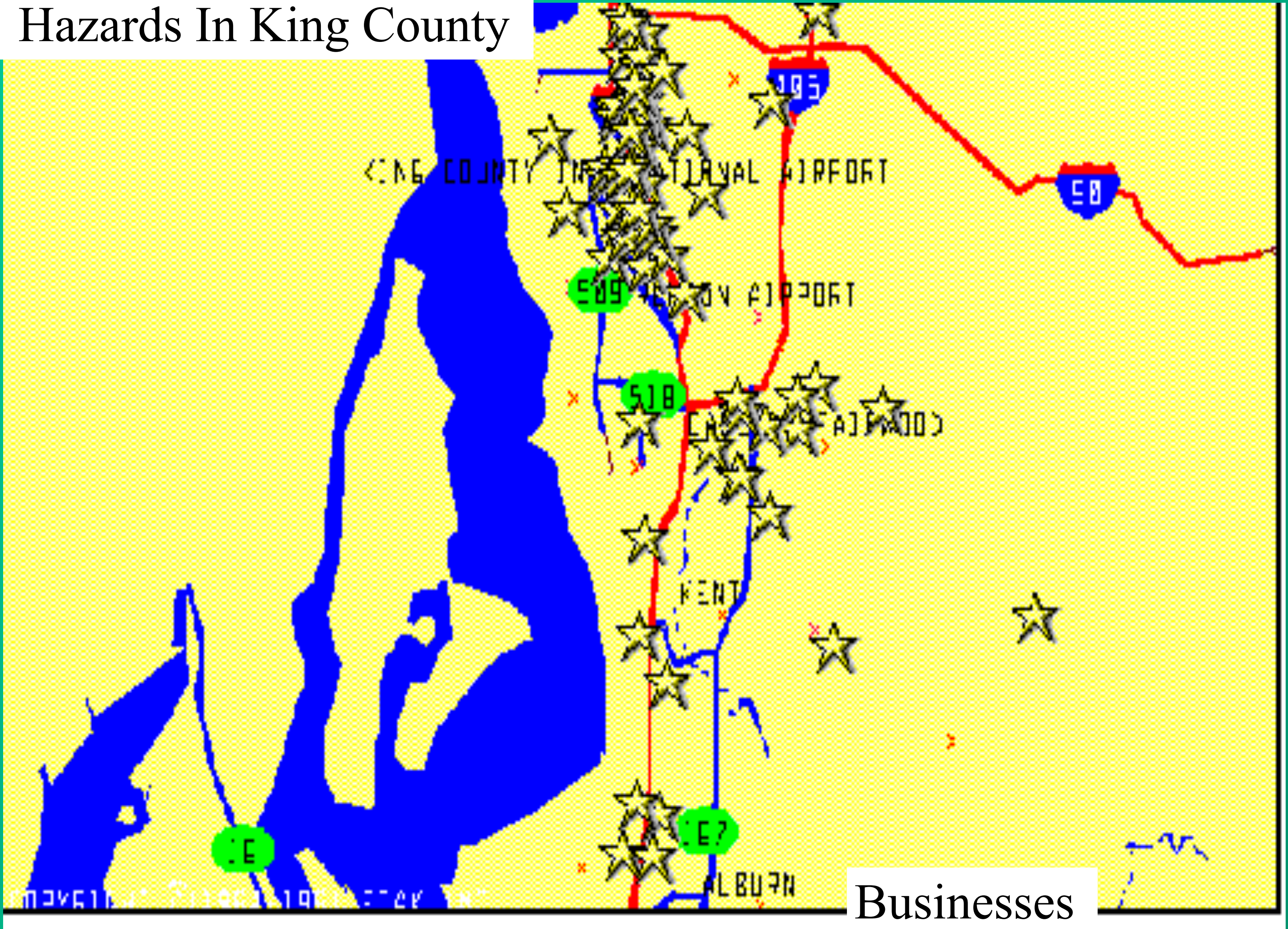
Drug Labs

Research Labs

Rail Lines

Homes and House Fires

Hazards In King County

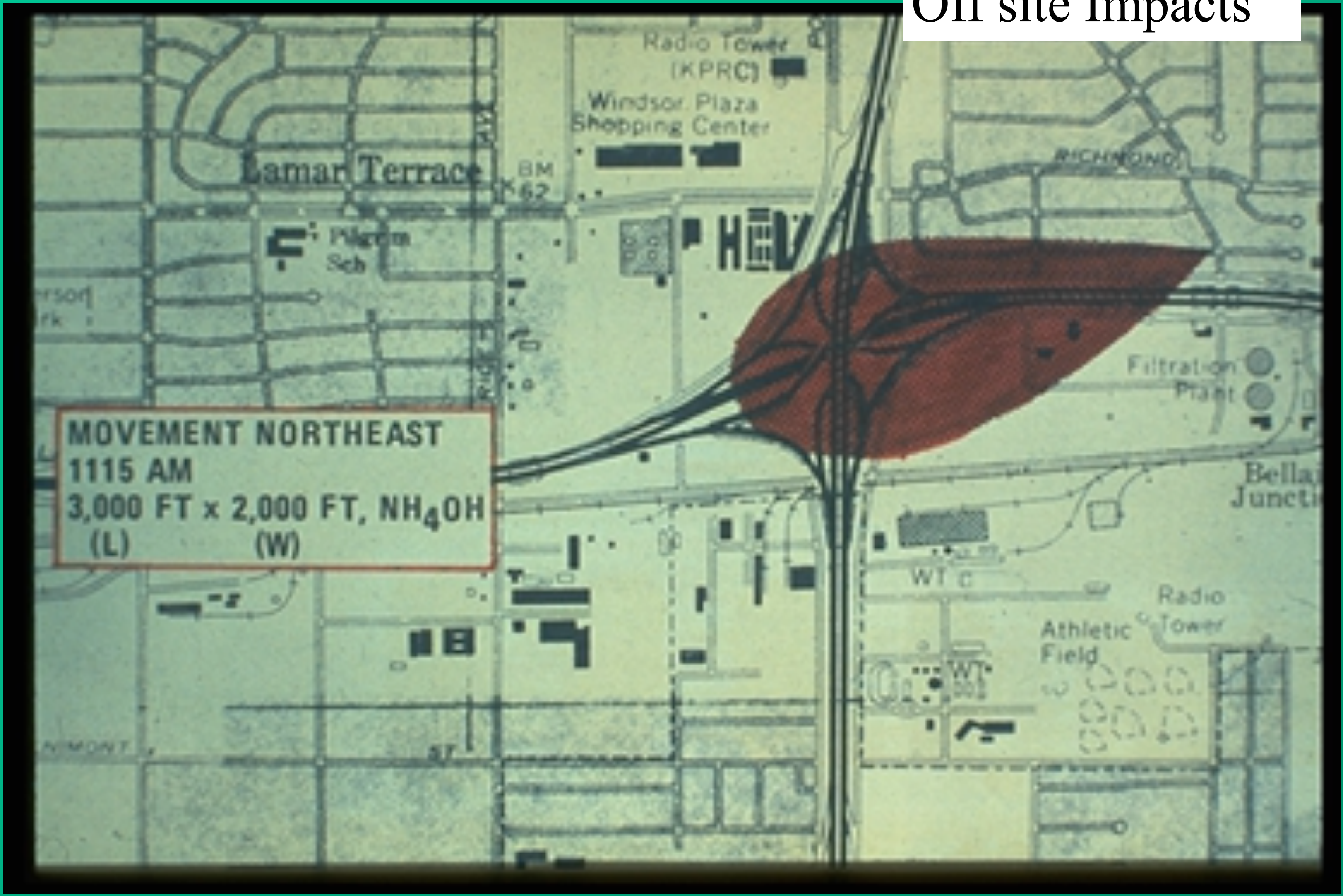


Businesses

Consequences of Hazmat Spills

- Illness
- Environmental Damage
- Economic Impact
- Long Term Evacuations
- Tax base Impact
- Public Confidence
- Transportation and Medical Impact

Off site Impacts



MOVEMENT NORTHEAST
1115 AM
3,000 FT x 2,000 FT, NH_4OH
(L) (W)

BNAU 280558
TUKWILA FIRE DEPT. AID UNIT
76

Boeing Auburn ‘95

Sprechen Sie Deutsch?

- Terminology and Sources of Information
- MSDS
- Shipping Papers
- Labels and Markings
- DOT Guidebook

ONE LETTER in a Chemical Name CAN MAKE ALL THE DIFFERENCE!!!!

Important Terms & Concepts

- Radiological (.002 microcuries per gram)
- Teratogens, Carcinogens & Mutogens
- Ignition Point
- Pyroforic Materials
- Flammable vs. Combustible
- LEL, UEL, LD_{50}, LC_{50}
- Acute and Chronic - Examples?

Hazard Types

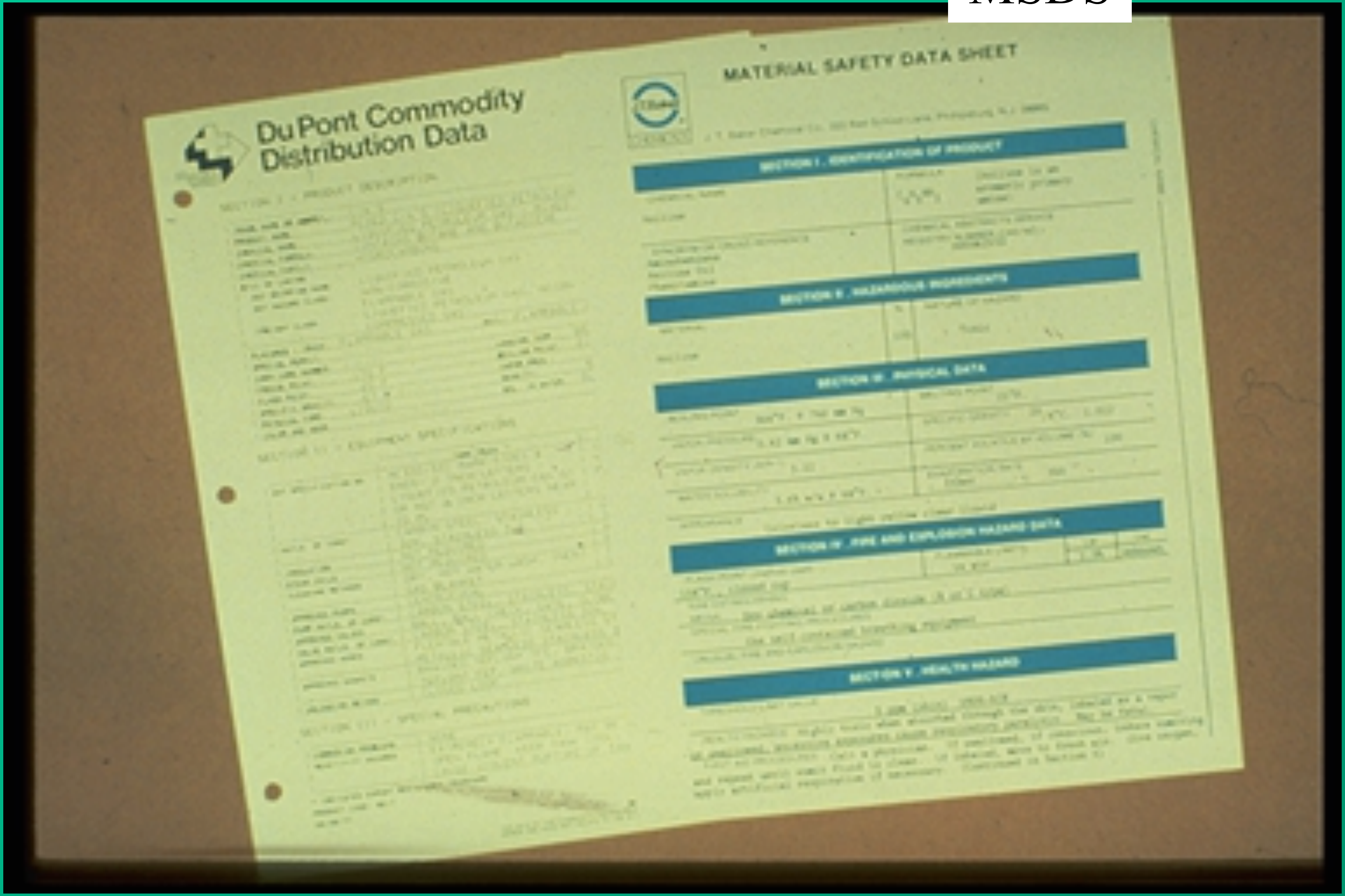
- Chemical
- Thermal
- Asphyxiation
- Radiological
- Biological

Routes of Entry

Observing Releases

- Available Documents
- Labels and NFPA 704
- Vessel Silhouettes
- Drivers, Employees, Suspects
- Your Senses

MSDS



Du Pont Commodity Distribution Data

MATERIAL SAFETY DATA SHEET

SECTION I - IDENTIFICATION OF PRODUCT

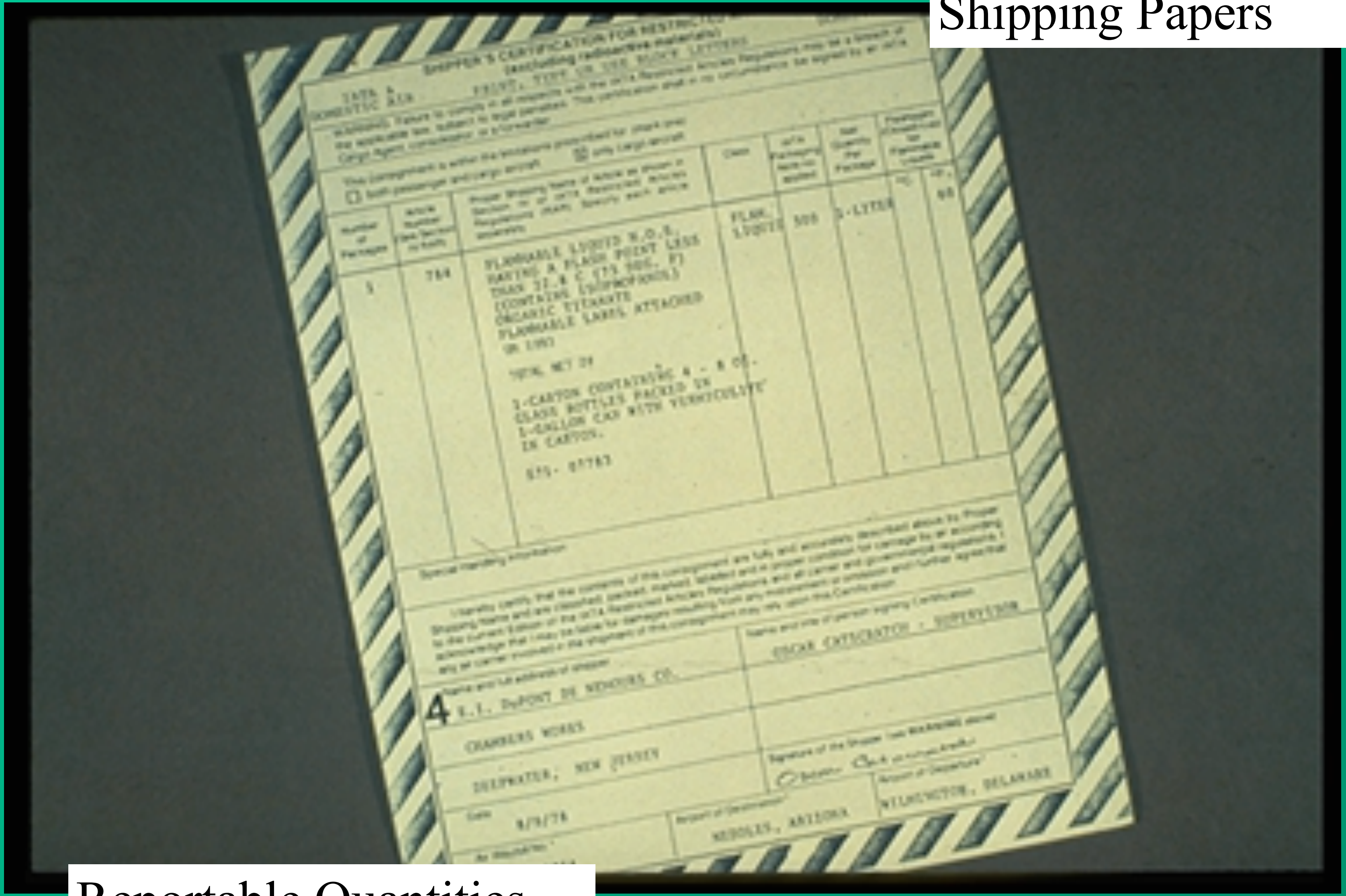
SECTION II - HAZARDOUS INGREDIENTS

SECTION III - PHYSICAL DATA

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

SECTION V - HEALTH HAZARD

Shipping Papers



SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES
(excluding radioactive materials)

IATA & DOMESTIC AIR — PRINT, TYPE OR USE BLOCK LETTERS

Number of Packages	Article Number	Proper Shipping Name	Class	Packaging	Net Quantity per Package
1	784	FLAMMABLE LIQUID N.O.S. HAVING A FLASH POINT LESS THAN 22.8 C (73 DEG. F) (CONTAINS ISOPROPOXIDE) ORGANIC TITANATE FLAMMABLE LABEL ATTACHED TOTAL NET 1 GAL 1-CARTON CONTAINING 4 - 8 OZ. GLASS BOTTLES PACKED IN 1-GALLON CAN WITH VERMICULITE IN CARTON.	FLAM. LIQUID	305	1-LITER

Special Handling Information

Name and title of person signing Certification: OSCAR CATSCRATCH - SUPERVISOR

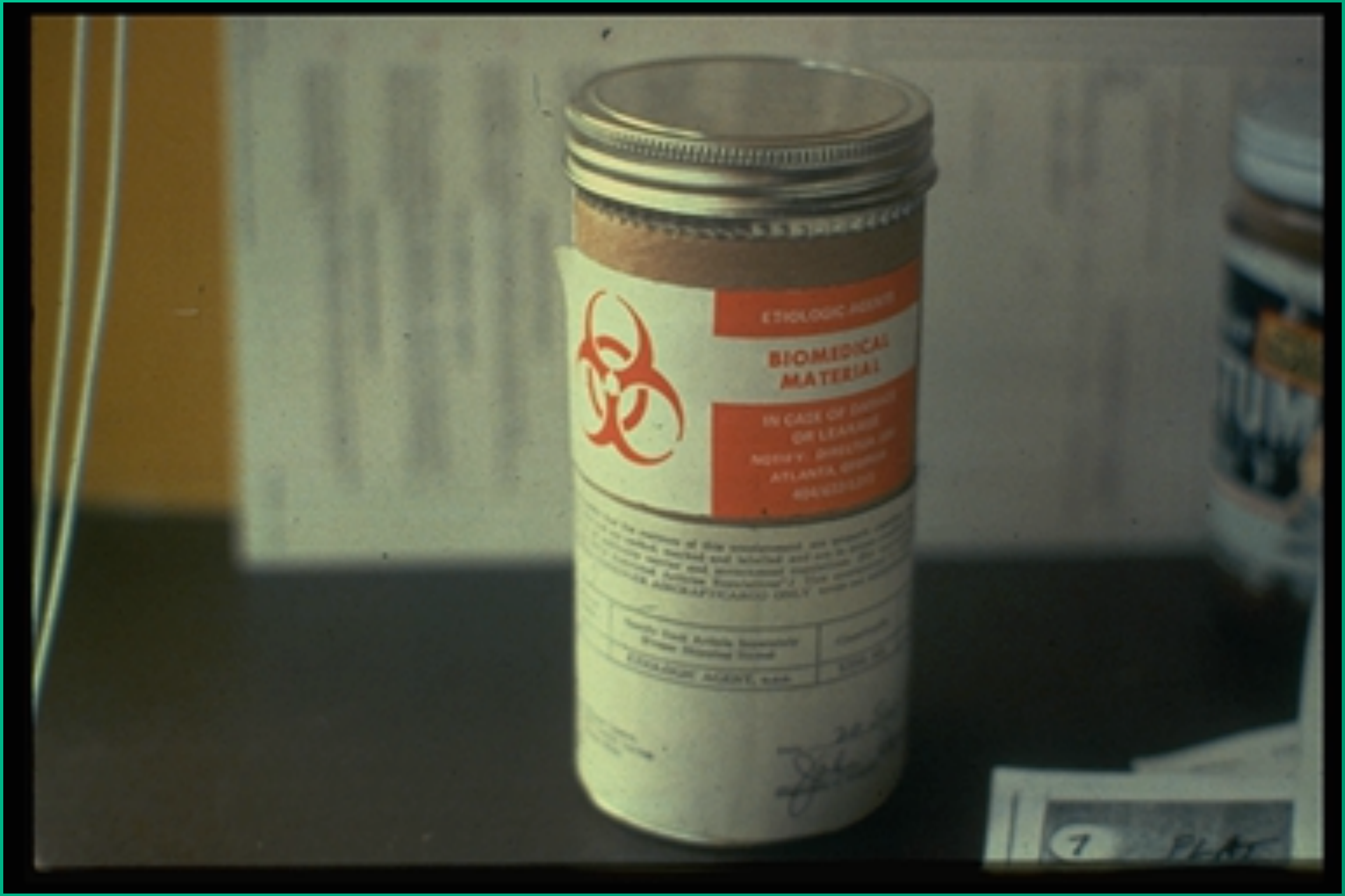
Name and full address of shipper:
4 E.I. DuPONT DE NEMOURS CO.
CHAMBERS WORKS
DEEPWATER, NEW JERSEY

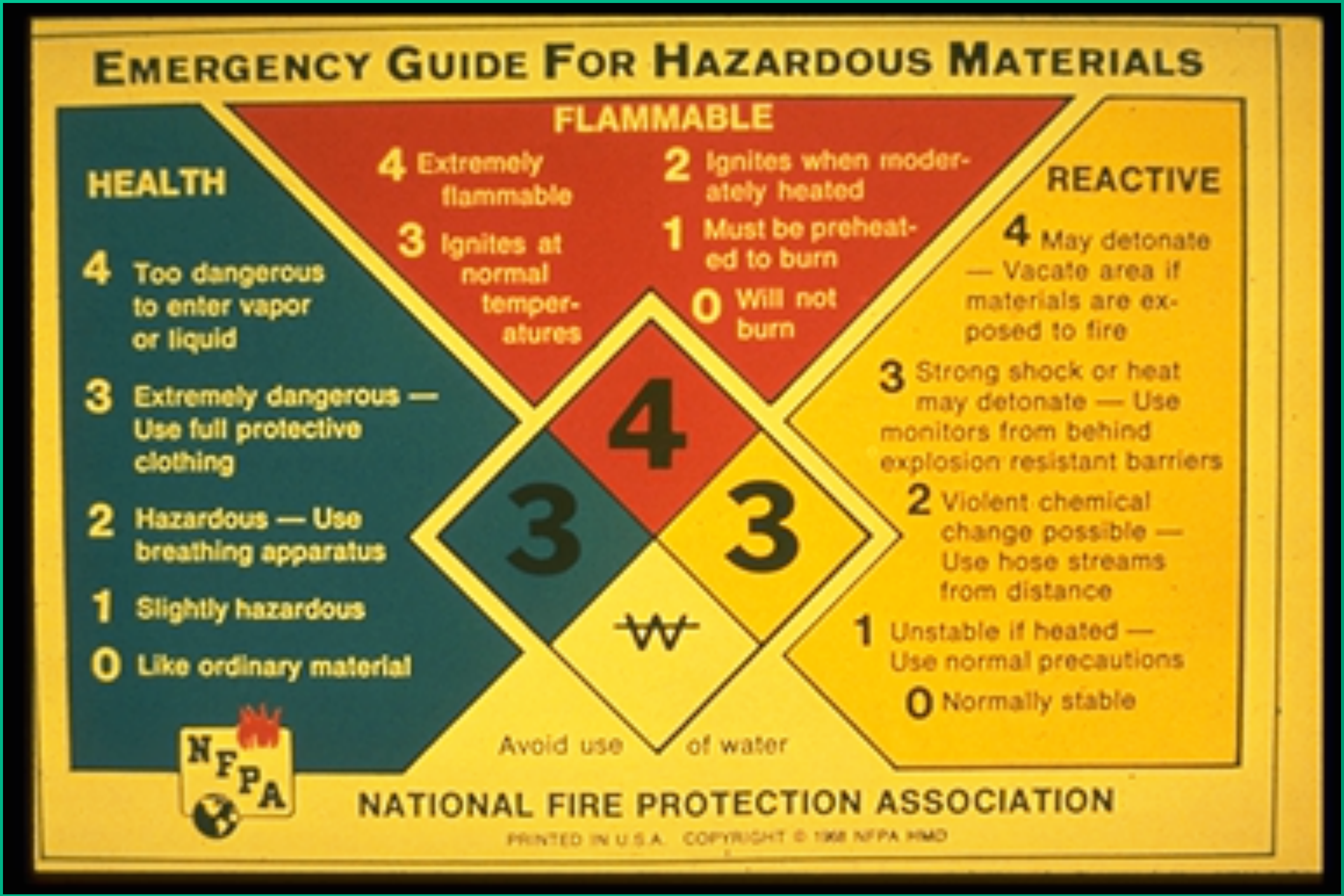
Airport of Departure: WILMINGTON, DELAWARE

Date: 8/9/78

Airport of Destination: NOGALES, ARIZONA

Reportable Quantities


ETIOLOGIC AGENTS
BIOMEDICAL MATERIAL
IN CASE OF DAMAGE
OR LEAKAGE
ATLANTA, GEORGIA
7



EMERGENCY GUIDE FOR HAZARDOUS MATERIALS

FLAMMABLE

4 Extremely flammable

3 Ignites at normal temperatures

2 Ignites when moderately heated

1 Must be preheated to burn

0 Will not burn

HEALTH

4 Too dangerous to enter vapor or liquid

3 Extremely dangerous — Use full protective clothing

2 Hazardous — Use breathing apparatus

1 Slightly hazardous

0 Like ordinary material

REACTIVE

4 May detonate — Vacate area if materials are exposed to fire

3 Strong shock or heat may detonate — Use monitors from behind explosion resistant barriers

2 Violent chemical change possible — Use hose streams from distance

1 Unstable if heated — Use normal precautions

0 Normally stable

Avoid use of water

NFPA

NATIONAL FIRE PROTECTION ASSOCIATION

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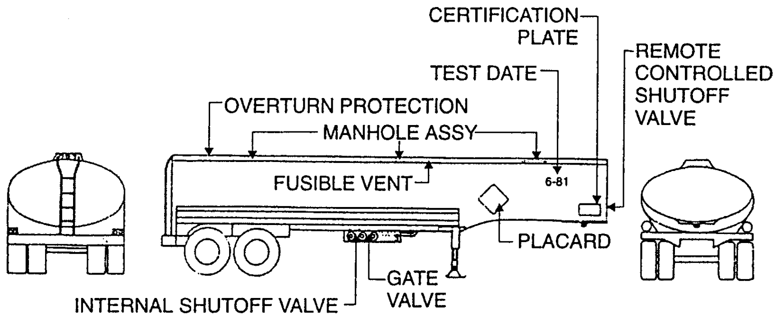
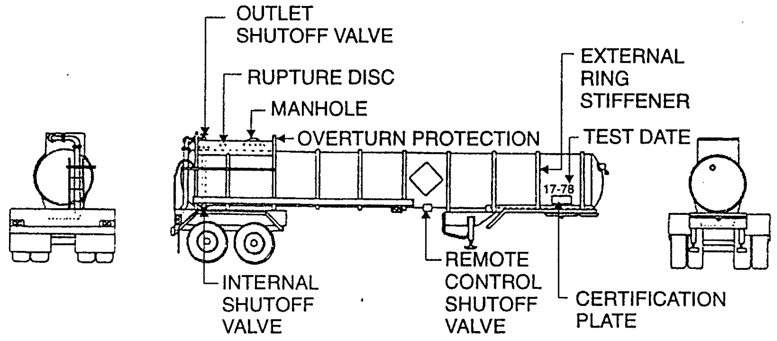
FIGURE 1-1
HIGHWAY

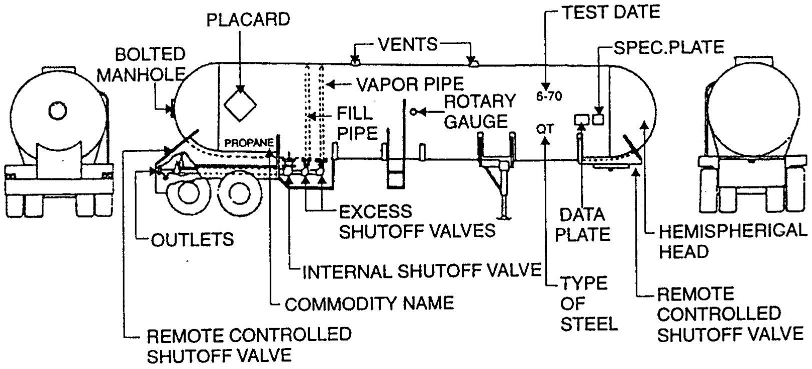


FLAMMABLE AND COMBUSTIBLE LIQUIDS
MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306
Example: Gasoline, Jet Fuel, Methonal, Ethyl Alcohol

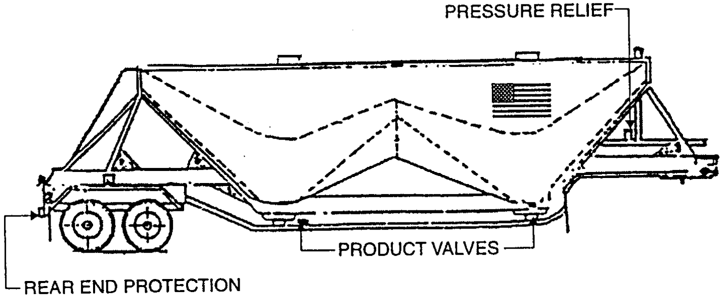


CORROSIVE MATERIALS
MC 310, MC 311, MC 312
Example: Chemicals, Acids

FIGURE 1-1 HIGHWAY continued



COMPRESSED GAS
MC 330, MC 331
Example: Flammable: Propane, Butane LP Gas
Non-Flammable: Anhydrous Ammonia



PNEUMATIC DRY BULK PRODUCTS

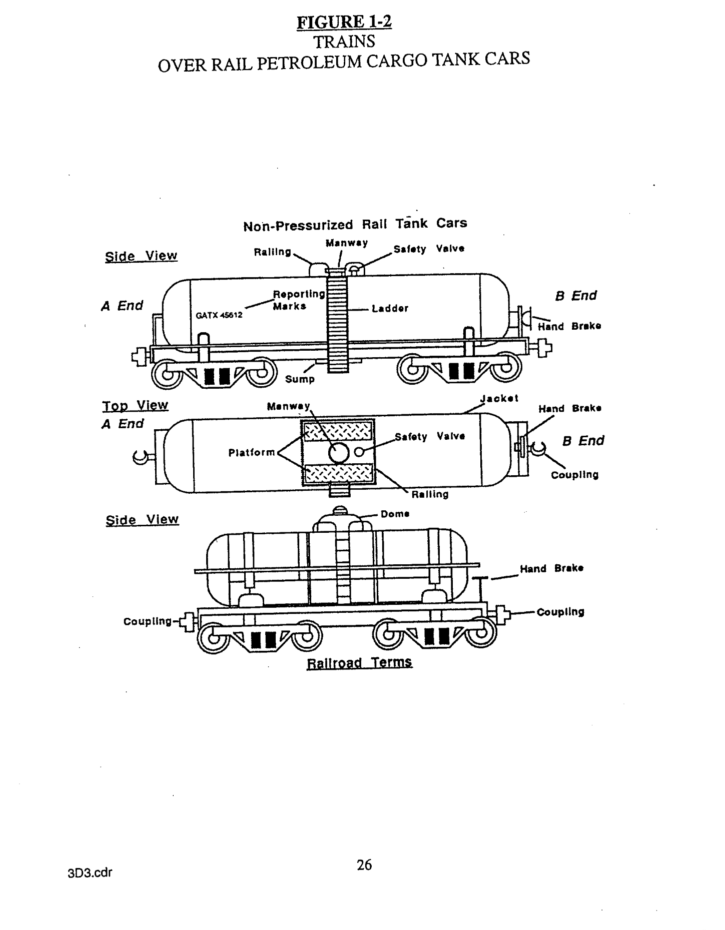


FIGURE 1-2
TRAINS
OVER RAIL PETROLEUM CARGO TANK CARS

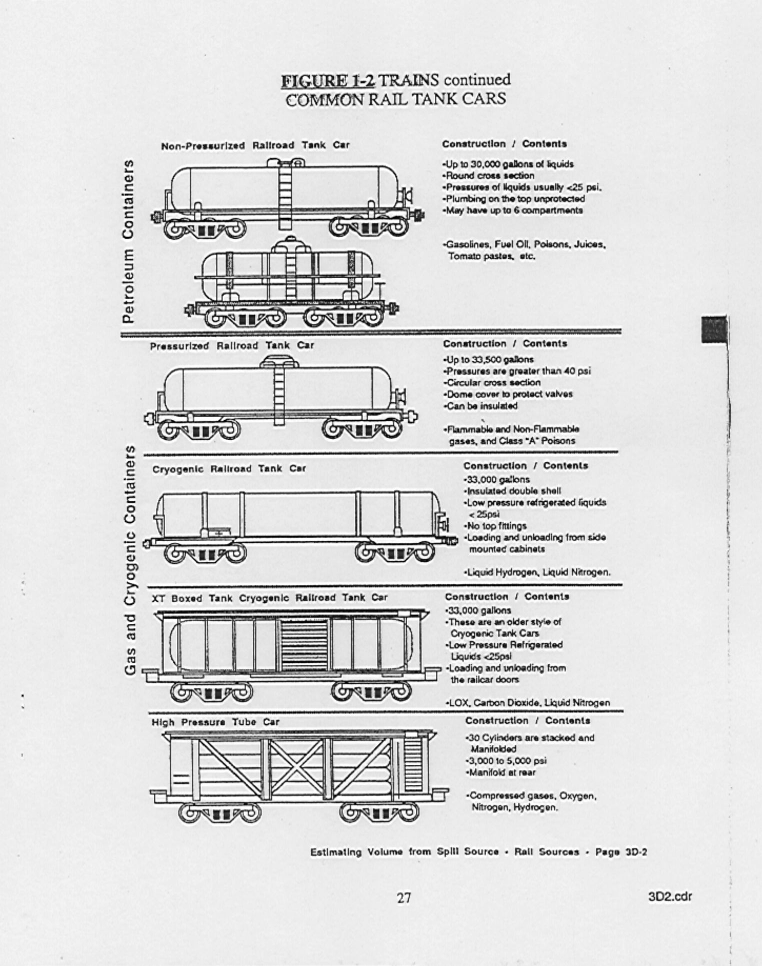


FIGURE 1-2 TRAINS continued
COMMON RAIL TANK CARS

Non-Pressurized Railroad Tank Car

Construction / Contents
- Up to 30,000 gallons of liquids
- Round cross section
- Pressures of liquids usually <25 psi.
- Plumbing on the top unprotected
- May have up to 6 compartments

- Gasolines, Fuel Oil, Poisons, Juices, Tomato pastes, etc.

Pressurized Railroad Tank Car

Construction / Contents
- Up to 33,500 gallons
- Pressures are greater than 40 psi
- Circular cross section
- Dome cover to protect valves
- Can be insulated

- Flammable and Non-Flammable gases, and Class "A" Poisons

Cryogenic Railroad Tank Car

Construction / Contents
- 33,000 gallons
- Insulated double shell
- Low pressure refrigerated liquids < 25psi
- No top fittings
- Loading and unloading from side mounted cabinets

- Liquid Hydrogen, Liquid Nitrogen.

XT Boxed Tank Cryogenic Railroad Tank Car

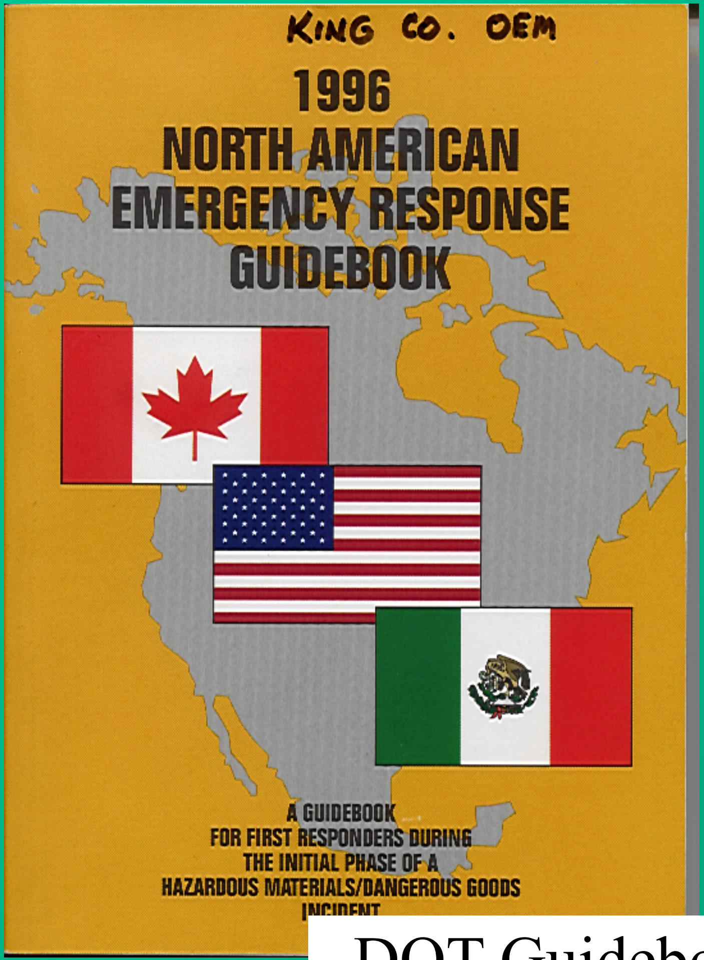
Construction / Contents
- 33,000 gallons
- These are an older style of Cryogenic Tank Cars
- Low Pressure Refrigerated Liquids <25psi
- Loading and unloading from the railcar doors

- LOX, Carbon Dioxide, Liquid Nitrogen

High Pressure Tube Car

Construction / Contents
- 30 Cylinders are stacked and Manifolded
- 3,000 to 5,000 psi
- Manifold at rear

- Compressed gases, Oxygen, Nitrogen, Hydrogen.

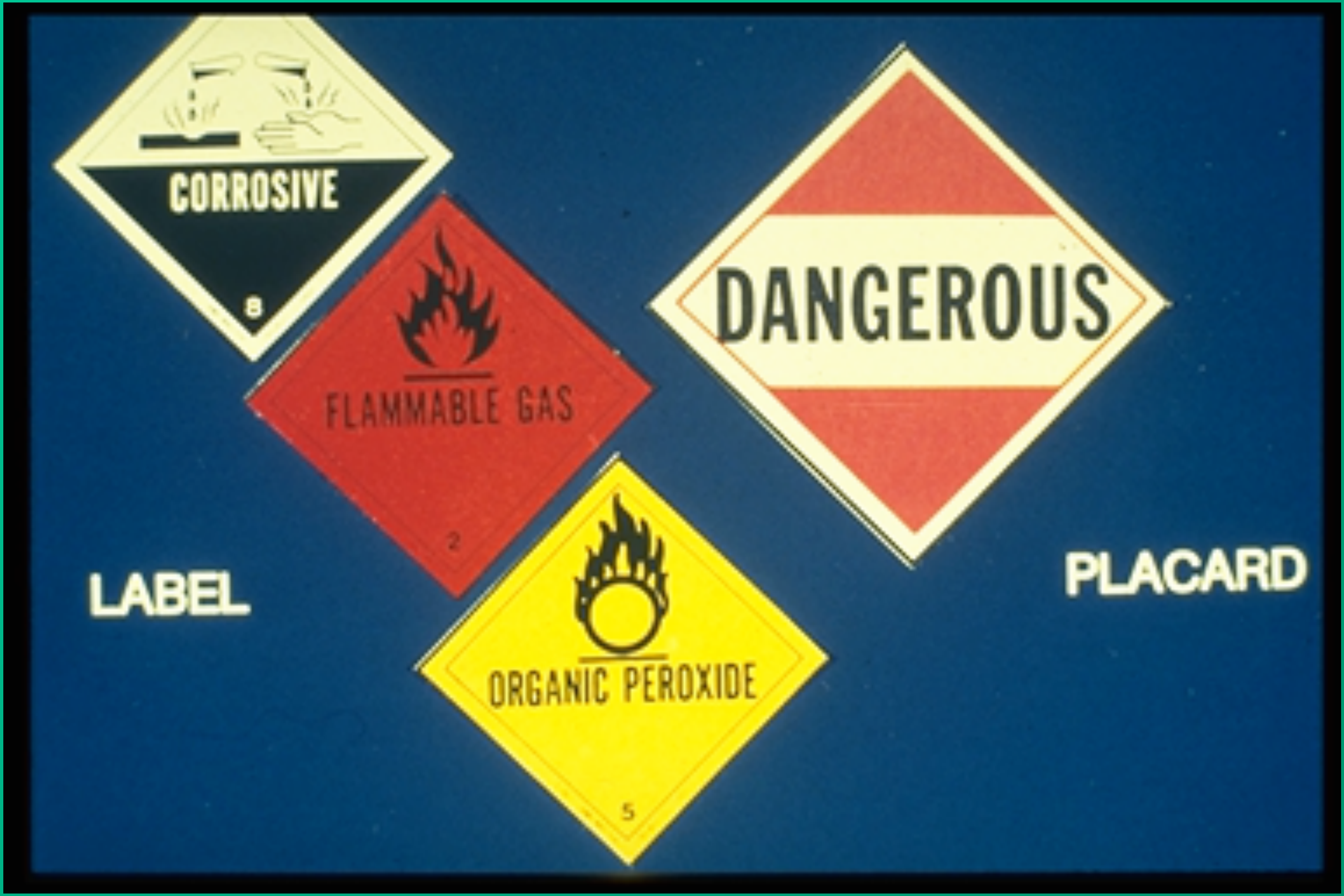


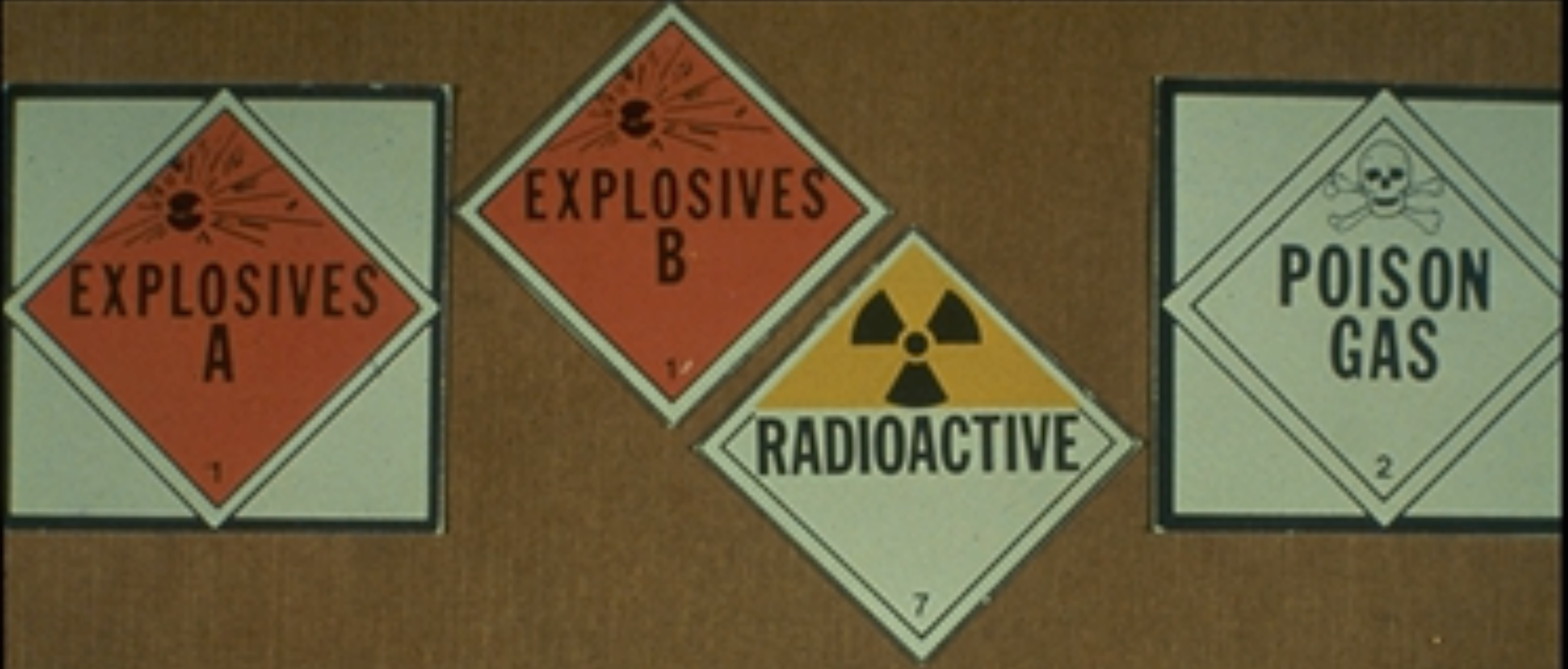
KING CO. OEM

1996
NORTH AMERICAN
EMERGENCY RESPONSE
GUIDEBOOK

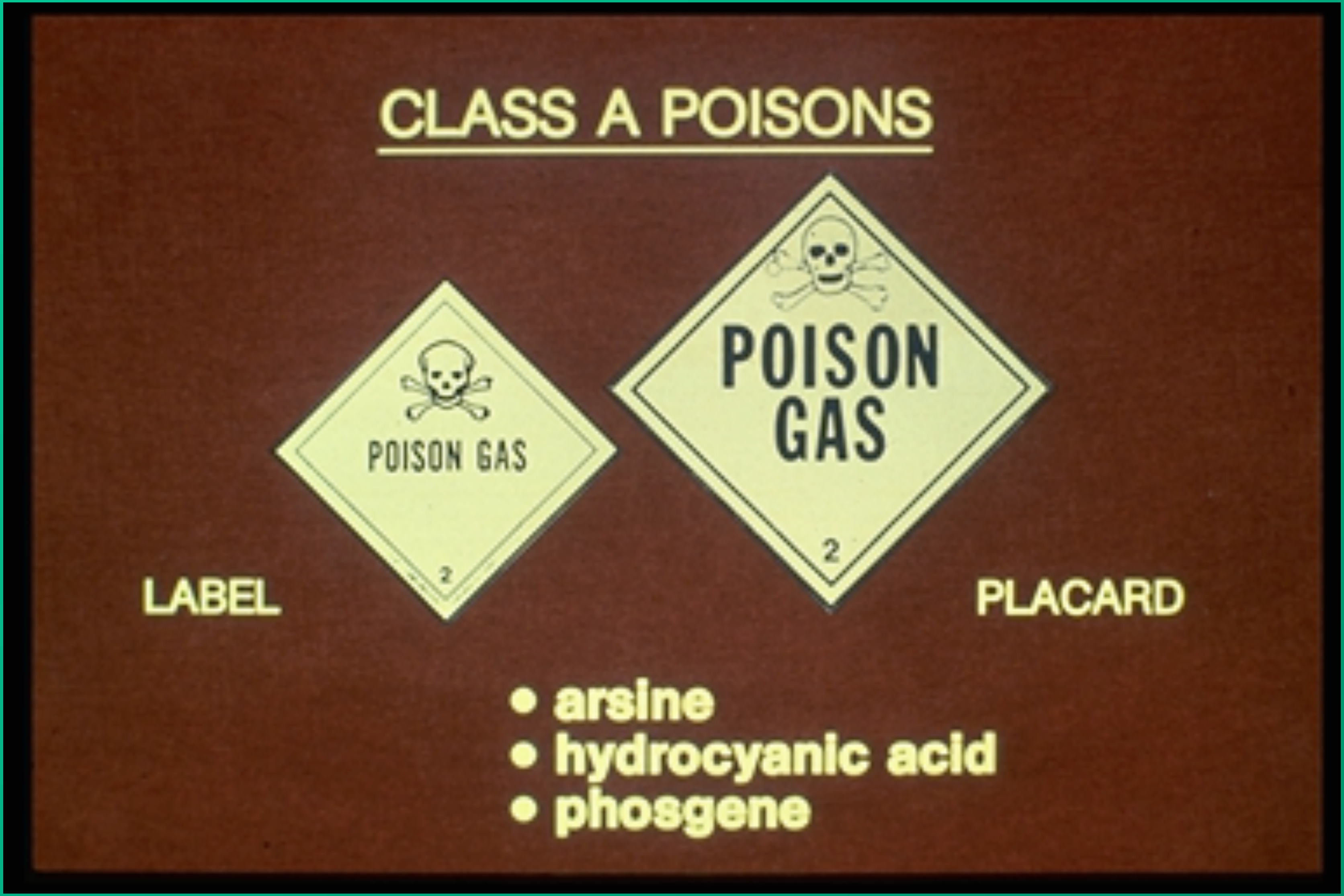
A GUIDEBOOK
FOR FIRST RESPONDERS DURING
THE INITIAL PHASE OF A
HAZARDOUS MATERIALS/DANGEROUS GOODS
INCIDENT

DOT Guidebook - New 2000 edition available


CORROSIVE
8
FLAMMABLE GAS
2
DANGEROUS
ORGANIC PEROXIDE
5
LABEL
PLACARD



IDENTIFICATION NUMBERS
NOT AUTHORIZED ON
PLACARD


POISON GAS
2
POISON
GAS
2

CLASS A POISONS

LABEL

PLACARD

- arsine
- hydrocyanic acid
- phosgene

Introduction to the Guidebook

- 9 Hazard Classes
- They Are

Limitations of the Guidebook

- The Yellow Pages
- The Blue Pages
- The Orange Pages
- The Green Pages
- Personal Protection Measures
- PPE
- Samples of Placards and Labels

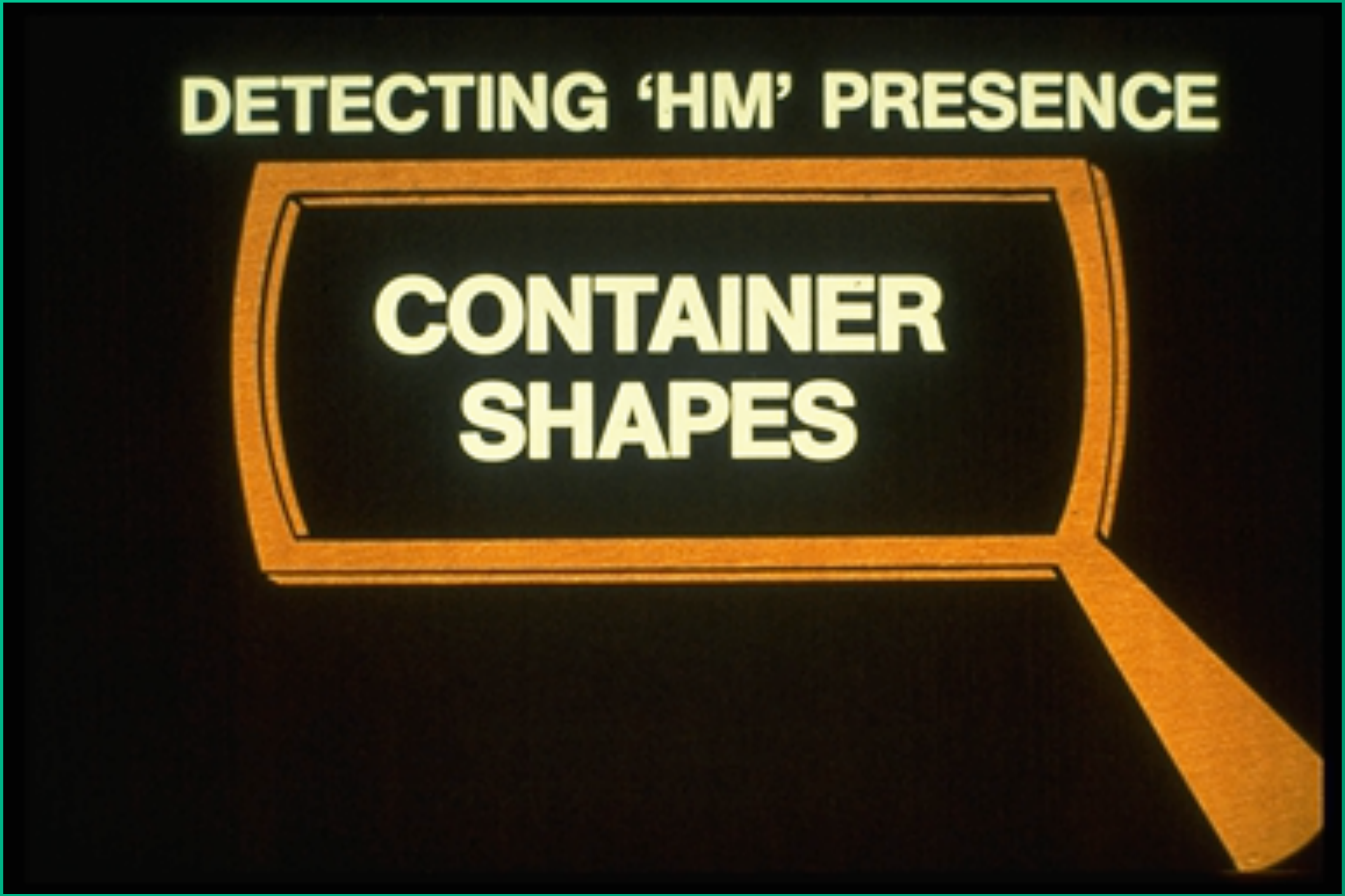
Practical Quiz

- Identify the following

  1090, 1993,

  1075, 1017,

  2210, 1845
- Give the UN #, Guide Number, Distance for
  - Anhydrous Ammonia
  - Gasoline
  - Ethylene Oxide



DETECTING ‘HM’ PRESENCE

CONTAINER
SHAPES

Health, Safety and Response

- Evacuation, Shelter in Place & Isolation

  Up, Up, Up

  Rule of Thumb
- Site Security & Rescue
- Exposure vs. Contamination
- Secondary Contamination
- Decontamination

IN CLOTHING
THE SCENE

Weapons of Mass Destruction

- Military Agents like nerve gas & blister agents or other chemicals
- Radioactive Materials
- Biological Weapons

Chemical Weapons

- Higher probability of industrial accident
- Wide variety of difficult materials to make
- Difficult to transport
- Readily detectible, many treatable
- Impact is largely fear and panic oriented

Radiological Protection

- Time
- Distance
- Shielding

Biological Weapons

- Anthrax
- Small Pox
- Ebola
- Many others

- Treated like other diseases
- Difficult to target a population
- Difficult to distribute/release effectively

Warnings and Notifications

Chemtrec	800-424-9300
NRC	800-424-8802
Police and Fire	911

The Employer’s Plan

- Standard of Care
- Required Plans
- Implementing the Plan
- Active vs. Passive Response
- Warning and Notifications

Questions?

Instructor Contacts

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- rich.tokarzewski@metrokc.gov